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Spiritual Striving, Acceptance Coping, and Depressive Symptoms among Adults Living with HIV/AIDS

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Abstract

We prospectively examined the effects of spiritual striving, social support, and acceptance coping on changes in depressive symptoms among adults living with HIV/AIDS. Participants were 180 culturally diverse adults with HIV/AIDS. Participants completed measures of spiritual striving, social support, coping styles, and depressive symptoms at baseline, three-month follow-up, and six-month follow-up. A path model showed that spiritual striving had direct and indirect inverse effects on changes in depressive symptoms. The relationship between spiritual striving and depressive symptoms was partially mediated by acceptance coping, but not by social support. Results suggest that people living with HIV/AIDS who strive for spiritual growth in the context of their illness experience less negative affect.

Keywords

- *acceptance coping*
- *depressive symptoms*
- *HIV/AIDS*
- *social support*
- *spirituality*

DEPRESSION is one of the most common mental health problems reported among people with HIV/AIDS. In HIV-positive populations, the lifetime prevalence of major depressive disorder has been estimated at 22–45 percent (Penzak, Reddy, & Grimsley, 2000) and the reported point prevalence of moderate to high levels of depressive symptoms has ranged between 21–97 percent (Eller, 2006). Some evidence suggests that depressive symptoms are associated with poor health outcomes among people with HIV/AIDS, including more rapid HIV disease progression and higher mortality rates (Ickovics et al., 2001; Leserman et al., 1999; Mayne, Vittinghoff, Chesney, Barrett, & Coates, 1996). The links between depressive symptoms and poorer health outcomes in this population underscore the importance of increasing our understanding of factors that may help to reduce depressive symptoms.

Many studies have shown that spirituality and religiousness are associated with lower levels of depressive symptoms among people living with HIV (Simoni & Ortiz, 2003; Woods, Antoni, Ironson, & Kling, 1999; Yi et al., 2006). However, few studies have examined potential mechanisms in this link using a longitudinal design (e.g. Carrico et al., 2006; Ironson, Stuetzle, & Fletcher, 2006). Social support and coping style are two factors that may mediate the association between spirituality and depressive symptoms. Numerous studies have found that social support is associated with lower levels of negative affect and higher levels of positive affect among people with HIV/AIDS (Lackner, Joseph, Ostrow, & Eshleman, 1993; Remien et al., 2006; Simoni, Frick, & Huang, 2006; Turner-Cobb et al., 2002). Regarding coping style, several studies have shown that problem-focused/active coping is associated with lower levels of negative affect, whereas avoidant coping strategies such as cognitive and behavioral disengagement are associated with higher levels of negative affect among people with HIV/AIDS (Gore-Felton et al., 2006; Park, Folkman, & Bostrom, 2001; Penedo et al., 2001). For example, in a recent study of low income, HIV-positive African American mothers, both social support and active coping mediated the relationship between higher levels of religious involvement and lower levels of psychological distress (Prado et al., 2004).

While much research has focused on the use of active versus avoidant coping, acceptance coping may be an important mechanism in the link between spirituality and depressive symptoms in HIV-positive populations. Both Eastern and Western religious

traditions promote the practice of acceptance in the face of suffering (de Caussade, 1921/2007; Wallace & Shapiro, 2006). As a form of coping, acceptance includes the following: ‘the person must be able to recognize the experience of discomfort or displeasure, connect it to some aspect of the situation, and act effectively while still experiencing discomfort’ (Hayes, Follette, & Linehan, 2004, pp. 175–6). It is important to note that acceptance is a construct that is not synonymous with passivity. In fact, acceptance coping has shown positive associations with active coping (Carver, Scheier, & Weintraub, 1989). Among men and women with HIV/AIDS, more direct engagement with and acceptance of HIV illness were associated with better adjustment to living with HIV/AIDS and greater reduction in levels of stress (Koopman et al., 2000; Turner-Cobb et al., 2002).

The transactional model of stress and coping, developed by Lazarus and Folkman (1984), provides a framework to understand the complexity of spirituality and coping (see also Folkman & Moskowitz, 2000). This model suggests that both positive affect and distress can co-occur within the context of stressful life events. Positive affect can buffer the effects of stress through mechanisms such as positive coping, positive reappraisal, and the infusion of meaning on multiple levels of daily experience (Folkman & Moskowitz, 2000; Park & Folkman, 1997). Spirituality may therefore offer a context for the infusion of life meaning in the context of HIV/AIDS.

Guided by the transactional model of stress and coping developed by Lazarus and Folkman, we examined the relationship between spiritual striving and depressive symptoms in a diverse sample of people living with HIV/AIDS. We define ‘spiritual striving’ as the process of consciously trying to grow spiritually and pursuing a meaningful and fulfilling daily life. We hypothesized that spiritual striving would predict decreases in depressive symptoms and that this relationship would be mediated by acceptance coping and social support.

Method

Participants and procedure

The analyses were conducted using longitudinal data from a randomized controlled trial designed to examine the effects of supportive/expressive group psychotherapy on physical health, health behavior, and quality of life in HIV-positive men and women (Belanoff et al., 2005). Prior to randomization into

treatment or control groups, baseline assessment data were collected on each participant. Of the 186 participants who were randomized into the study, six cases were dropped from the current analyses due to missing data. The mean age of participants was 40 years with an average of 14 years of education. Sixty-six percent were unemployed and 64 percent had an annual family income of less than \$20,000. Forty-eight percent were single and 30 percent were married or living as married. Forty-three percent reported being heterosexual, 49 percent reported being gay/lesbian, and 7 percent reported being bisexual. Religious affiliations were Catholic (20%), Protestant (13%), Jewish (3%), Muslim (1%), other (33%), and none (30%). Allowing for multiple responses, the racial/ethnic background of participants was diverse: non-Hispanic Whites (57%), Black/African American (33%), Latino/Hispanic (8%), Native American/Alaskan Native (6%), Asian/Asian American (3%), and other (5%).

Approval was obtained from the appropriate institutional review board and each participant provided informed consent. From 1996–1999, men and women living with HIV were recruited through newspaper advertisements and at four major county hospitals, a university hospital, and community medical clinics in the Greater San Francisco Bay Area. Participants completed questionnaires at baseline (Time 1), three-month follow-up (Time 2), and six-month follow-up (Time 3).

Criteria for inclusion were sufficiently broad to allow the sample to reflect as diverse a population as possible to maximize generalizability of any findings. These included: (1) a positive HIV diagnosis (either symptomatic or asymptomatic); (2) at least 18 years of age; (3) English language skill (to complete questionnaires and participate, if assigned, to the group psychotherapy condition); and (4) geographical proximity to groups in order to attend if assigned.

The *Structured Clinical Interview for DSM-IV AXIS I Disorders—Nonpatient Edition* (SCID-I/NP, Version 2.0; First, Spitzer, Gibbon, & Williams, 1996) was administered face-to-face to potential participants by trained and supervised research interviewers. The SCID-I/NP was used to identify potential participants with severe psychiatric disorders (i.e. schizophrenia or other psychotic disorders) who would not be appropriate for participating in the group intervention. Such identified participants were excluded from this study. However, people with major depressive disorder,

obsessive compulsive disorder, or current substance abuse were included if they agreed to seek help outside of the study for these issues in order to be able to function as participants. Additional exclusion criteria were active tuberculosis, acute intoxication, participation in an ongoing HIV/AIDS support group, or suicidal/homicidal ideation.

Each participant underwent three separate screenings to determine their ability to participate, if randomized, in a group. Screenings included a telephone prescreen, an assessment with the SCID-I/NP, and finally a baseline interview. Interviewers reviewed with a psychiatrist all cases with which they had questions about the participants' mental competence to participate in the study to determine eligibility. Initial screening and baseline assessment were conducted over two 90-minute testing sessions and follow-up assessment sessions required up to one 90-minute session. Participants received \$25 for completing the interviews and baseline questionnaires.

Measures

Demographic and HIV-related variables

The Background Information Questionnaire, a brief self-report measure, was used to collect demographic and HIV-related data at baseline from all participants. Data included age, gender, race, sexual preference, religious affiliation, relationship status, employment status, years of education, and household income. Injecting drug use during the past three months ('yes' or 'no') was assessed in a Drug/Alcohol Use Questionnaire. HIV-related health symptoms during the past three months were assessed in a Medical Status Interview. Participants indicated whether or not ('yes' or 'no') they experienced one or more of the following symptoms for at least three days in the last three months: sore throat, skin rash, persistent fatigue, diarrhea, high fever, enlarged lymph nodes, night sweats, headaches, and muscle/joint pain. In addition, participants indicated whether they experienced the following symptoms for at least two weeks in the last three months: shortness of breath, dry cough, yeast infection in mouth or throat, skin discoloration, or unintended weight loss of 10 or more pounds. The total HIV-related symptom score was computed as an unweighted sum of the number of symptoms reported, which could range from 0 (experienced none of the symptoms) to 14 (experienced all of the symptoms) (Ashton et al., 2005). CD4+ T-cell count and HIV diagnosis verification was obtained from participants' medical records.

Principles of Living Survey (Thoresen et al., 1996) This measure was developed for the parent study to assess respondents' use of each of three strategies for experiencing life meaning. The three strategies were derived from literature on spirituality and physical/mental health: (1) spiritual striving (renamed from spiritual growth) measures the attempt to grow spiritually (e.g. 'I am trying to grow spiritually as a person'); (2) spiritual beliefs and practices measures deriving life meaning from spiritual beliefs and practices (e.g. 'I meditate and/or pray regularly in a systematic way'); and (3) embracing life's fullness measures living daily life as meaningfully as possible (e.g. 'I feel alive and joyful at the ordinary things of daily life'). Thirteen items used a six-point Likert-type scale, from 1 = 'completely disagree' to 6 = 'completely agree'. Three items used a five-point scale, e.g. for the frequency of praying to God/Higher Power/Universal Energy, from 1 = 'never' to 5 = 'several times a week'. One item assessing the self-rated degree of religiousness used a four-point scale ranging from 1 = 'not at all religious' to 4 = 'deeply religious'. The three subscales are computed using mean percentile rank-ordered scores in order to weight each item equally. The potential range of scores on the Principles of Living Survey is .01–100. The current study combined the spiritual striving and embracing life's fullness subscales because they correlated highly ($r = .54, p < .001$), thus representing overlapping constructs. One item was deleted because of a low item-total correlation, leaving a total of eight items. The internal consistency (Cronbach's alpha) for spiritual striving in the current study was .77.

The process used in developing this instrument supported its content validity by using expert judges to determine its final content (Crano & Brewer, 2002). In addition to developing the content of the items based on a review of the relevant literature, a panel of six experts in the areas of the psychology of spirituality and/or in psychosocial aspects of HIV/AIDS reviewed and refined the items. The construct validity of this measure was supported by evidence that this scale was negatively associated with another measure for which this negative relationship would make logical sense. This previous cross-sectional research (Pérez et al., in press) found that, as expected, greater levels of spiritual striving and embracing life's fullness were significantly related to lower distress.

UCLA Measure of Social Support (Schwarzer, Dunkel-Schetter, & Kemeny, 1994) This instrument assesses the frequency and quality of social support pertaining to a particular domain (i.e. living with HIV/AIDS). It measures two dimensions using a total of 24 items. One dimension assesses the types of social support (information and advice, instrumental assistance, encouragement and reassurance, and listening and understanding). Another dimension assesses the source of social support (family, partner, friends, and group domains). Items assessing the frequency of social support use a five-point Likert-type scale ranging from 1 = 'never' to 5 = 'very often' (e.g. 'How often did each of these people *listen* to and try to *understand* your concerns about your HIV-related stress?'). Items assessing the quality of social support use a seven-point Likert-type scale ranging from 1 = 'very dissatisfied' to 7 = 'very satisfied' (e.g. 'How satisfied or dissatisfied have you been with the listening and understanding you have received concerning your feelings about your HIV-related stress?'). Factor analysis has confirmed the differentiated dimensions of social support assessed in this instrument with a sample of gay men at risk for HIV or AIDS, contributing to its construct validity (Schwarzer et al., 1994). The potential range of the total social support score is 20–100. Cronbach's alpha of this measure in the current study was .93.

Brief COPE (Carver, 1997) This measure is a short version of the COPE, which has demonstrated good psychometric properties (Carver et al., 1989). The Brief COPE was worded to solicit self-report data on strategies used by the participant in the prior three months for coping with issues related to being HIV-positive and can be adapted for the target population to reduce response burden (Carver, 1997). The Brief COPE included 24 items that use a four-point Likert-type scale with responses that ranged from 1 = 'I have not done this at all' to 4 = 'I have been doing this a lot'. The acceptance subscale of Brief COPE scales was used in this study. This subscale includes two items: 'I've been accepting the reality of the fact that it has happened' and 'I've been learning to live with it'. The potential range of scores for these two items is 2–8. In the current study, acceptance coping demonstrated adequate internal consistency ($\alpha = .71$).

Center for Epidemiologic Studies-Depression (CES-D) scale (Radloff, 1977) The CES-D is a 20-item measure that assesses cognitive, affective,

Table 1. Correlations, means, and standard deviations of variables in the path model

Variable	Treatment group	HIV-related symptoms	Depressive symptoms T1	Spiritual striving	Social support	Acceptance coping	Depressive symptoms T3
HIV-related symptoms	.14						
Depressive symptoms T1	.15*	.28**					
Spiritual striving	.02	-.05	-.43**				
Social support	.17*	-.07	-.10	.17*			
Acceptance coping	.11	.07	-.05	.30**	.22**		
Depressive symptoms T3	.09	.25**	.51**	-.38**	-.16*	-.22**	
Mean	.54	3.33	12.01	68.29	76.00	3.33	11.47
SD	.50	2.80	9.09	13.76	20.61	0.78	8.13

Note: T1 = Time 1 (Baseline), T3 = Time 3 (Six-month follow-up)

* $p < .05$; ** $p < .01$

and vegetative symptoms of depression (depressed mood, feelings of worthlessness/guilt, sense of helplessness/hopelessness, psychomotor retardation, loss of appetite, and sleep disturbance) and has been used frequently in community settings. Participants responded on a 0 to 3 scale 'rarely or none of the time' to 'most of the time' to statements such as 'I felt depressed' using the previous week as a time frame. To control for possible confounds between HIV-related symptoms and somatic symptoms of depression, we dropped the five somatic complaints from the computation of the CES-D (i.e. fatigue, poor appetite, lack of energy, restless sleep, and poor concentration) (Ickovics et al., 2001). The remaining 15 cognitive and affective items were summed with four items reverse-scored to calculate a composite (range 0–45) used as a measure of depressive symptoms. Studies have shown good reliability and validity for the CES-D with HIV/AIDS populations (Linn, Monnig, Cain, & Usuh, 1993; Moskowitz, 2003). Cronbach's alpha for this scale, excluding the somatic symptoms, was .89 and .88 for baseline and six-month follow-up data, respectively.

Data analysis

Screening of the data using SPSS 13.0 indicated that the variables met the assumptions of normality and linearity for path analysis. Furthermore, there were no outliers among the variables and no multicollinearity (i.e. conditioning index greater than 30 for a given dimension coupled with variance proportions greater than .50 for at least two different variables) was evident among the predictor variables (Belsley, Kuh, & Welch, 1980). Six cases with randomly missing data were deleted from the analysis.

Treatment group status (dummy coded) was included as a covariate in the model in order to control for the effects of the intervention. In addition, the following variables were examined as potential covariates in the model: gender, sexual preference, race, education level, family income, injecting drug use status, CD4+ T-cell count, and HIV-related health symptoms at baseline. Of these, only HIV-related symptoms during the past three months were significantly associated with the dependent variable, depressive symptoms. Therefore, HIV-related symptoms were included as a covariate in the model. Correlations, means, and standard deviations of the variables in the model are presented in Table 1.

To examine the relationships among spiritual striving, social support, acceptance coping, and depressive symptoms, the data were analyzed using path analysis in the LISREL 8.71 program (Jöreskog & Sörbom, 1996). The path analysis began with the hypothesized model (Fig. 1). *T*-values of each parameter were then examined to determine if certain paths could be dropped from the model in order to develop a more parsimonious model. In addition, modification indices were examined to see if any additional paths needed to be estimated. Chi-square and other fit indices were then used to determine if the re-estimated model fit the data.

Results

The hypothesized model

Figure 1 shows the hypothesized model and final results of the modified path model. According to the hypotheses, higher levels of spiritual striving predict lower levels of depressive symptoms. The relationship

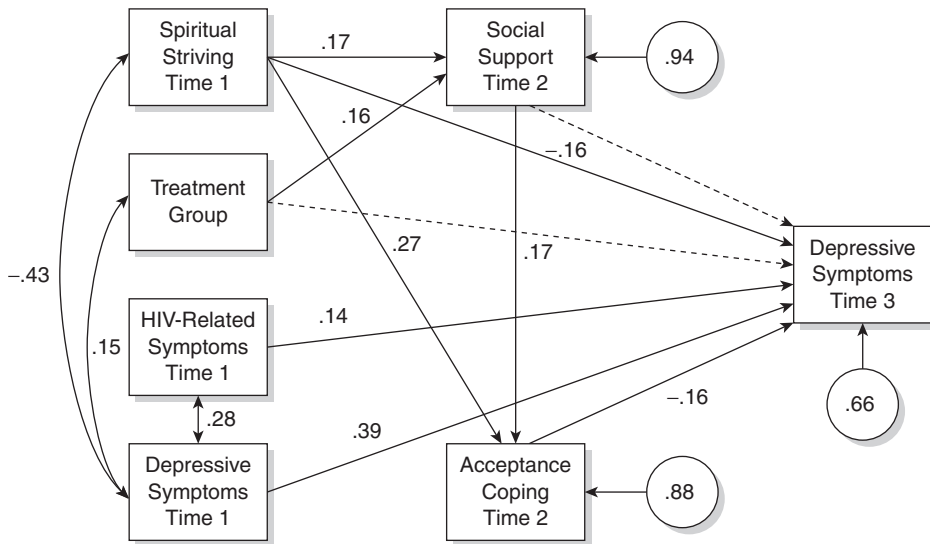


Figure 1. Mediated path model of spiritual striving predicting changes in depressive symptoms. Note: Lines with double-headed arrows represent correlations; lines with single-headed arrows represent standardized regression paths. Residual variance for each dependent variable is presented in the small circles. Non-significant paths in the hypothesized model are represented by dashed lines and were deleted in the final model.

between spiritual striving and depressive symptoms is mediated by social support and acceptance coping. Baseline HIV-related symptoms and depressive symptoms are included as control variables. By regressing baseline depressive symptoms on six-month depressive symptoms, the criterion variable represents *changes* in depressive symptoms.

Model estimation

Significant standardized parameter coefficients for the final model are presented in Fig. 1. Based on *t*-tests, two non-significant parameters were trimmed in order to develop a more parsimonious model. The final model fit the data extremely well, $\chi^2 (17, N = 180) = 6.09, p = .99, CFI = 1.00, RMSEA = 0.00$. Note that in path analysis, a non-significant chi-square is desirable, and the optimum values for the comparative fit index and root mean square error of approximation are 1.0 and 0.0, respectively. The results indicate an excellent fit of the model to the data.

Direct effects

Spiritual striving predicted higher levels of social support ($\beta = .17$), higher levels of acceptance coping ($\beta = .27$), and lower levels of depressive symptoms at Time 3 ($\beta = -.16$). Social support also predicted higher levels of acceptance coping ($\beta = .17$). In turn, acceptance

coping predicted lower levels of depressive symptoms at Time 3 ($\beta = -.16$). Two covariates, baseline depressive symptoms ($\beta = .39$) and baseline HIV-related symptoms ($\beta = .14$), also predicted depressive symptoms at the six-month follow-up. As expected, participation in the treatment group (dummy coded) predicted higher levels of social support ($\beta = .16$).

Indirect effects

The relationship between spiritual striving and depressive symptoms was mediated by acceptance coping (β for indirect effect = $-.05$). The indirect effect of social support on depressive symptoms via acceptance coping was not significant ($\beta = -.03, p > .05$).

Total effects

The total (direct and indirect) effect of spiritual striving on depressive symptoms was $\beta = -.21$. The overall model explained 34 percent of the variance in depressive symptoms at the six-month follow-up.

As a secondary analysis in this study, we also ran a two-group path model with treatment group status as a moderator (instead of a covariate) because we expected that the intervention—supportive/expressive group psychotherapy—would have an impact on the links between spiritual striving, social support, and depressive symptoms. However, there was not a

significant interaction (i.e. moderating effect of the intervention on the model), likely due to low statistical power.

Discussion

All but one of our hypothesized relationships were supported by the data. Our model showed that spiritual striving had both direct and indirect negative effects on depressive symptoms. Higher levels of spiritual striving predicted lower levels of depressive symptoms, and acceptance as a coping style partially mediated this relationship. We also found that acceptance coping increased as spiritual striving increased, empirically supporting a previous qualitative study that suggested a link between spirituality and acceptance (Siegel & Schrimshaw, 2002). The mediation suggests an important link between spiritual striving and acceptance as a coping style in reducing depressive symptoms. One possible interpretation could be that the peace of mind or mindfulness often associated with a spiritual/religious practice decreases depressive symptoms by increasing the use of acceptance in situations out of the control of the individual (Miller, 1952).

Contrary to our hypothesis, but consistent with some current research among people living with HIV/AIDS, we did not find evidence for the mediating effect of social support on the relationship between spiritual striving and depressive symptoms (Blaney et al., 2004; Derlega, Winstead, Oldfield, & Barbee, 2003; Mizuno, Purcell, Dawson-Rose, & Parsons, 2003). Surprisingly, social support did not predict changes in depressive symptoms in our model. While researchers have hypothesized that social support is an important mechanism in the link between religiousness/spirituality and depressive symptoms (Koenig, McCullough, & Larson, 2001; Smith, McCullough, & Poll, 2003), few studies have examined potential mediators in the link between spirituality and health outcomes using a prospective, longitudinal design. It is essential to differentiate specific dimensions of spirituality or religiousness that are hypothetically linked to social support and well-being. Social support may be linked more strongly to organizational religious activities (i.e. attendance at religious services) than one's individual spiritual striving and quest for meaning. Clearly, more longitudinal research is needed to understand the potential causal role of social support in the association between different dimensions of spirituality and health.

Our findings have important clinical implications for professionals who work with depressed HIV-positive patients. Specifically, assessing spiritual beliefs and supporting spiritual striving may be an effective adjunct to standard interventions for the treatment of depression for a substantial proportion of adults living with HIV/AIDS. For example, psychoeducational interventions that incorporate practices such as meditation or prayer for people who are receptive to spiritual practices may improve mood by reducing depressive symptoms.

Given the finding that acceptance mediates the relationship between spiritual striving and depressive symptoms, it may be particularly helpful to encourage spiritual practices and beliefs that are likely to promote a positive form of acceptance in coping with HIV/AIDS. It is important to note that previous research indicates that a form of acceptance known as 'realistic acceptance' is predictive of shorter survival in gay men with AIDS (Reed, Kemeny, Taylor, Wang, & Visscher, 1994). This highlights the need to make a distinction between practices and beliefs that promote positive acceptance compared to those that lead to debilitating resignation. Despite the apparent similarity in the terms 'acceptance coping' and 'realistic acceptance', this distinction in meaning may be linked to very different health implications.

Although our study is prospective, the use of path analysis (sometimes referred to as causal modeling) can neither establish causality nor determine whether our model is correct (Streiner, 2005). Our analysis is limited to the argument that the data are consistent with our model. Another methodological limitation to our study is that the data presented are self-reported, which may be influenced by several factors such as social desirability, mood, and a desire to manage impressions (Tourangeau, Rips, & Rasinski, 2000). In addition, our measurement of acceptance coping was based on a two-item subscale, limiting its potential reliability. Because we used a convenience sample of volunteer participants in our study, this raises questions about the generalizability of the results to the larger population of people living with HIV. On the other hand, the demographic diversity of this sample can also be viewed as a methodological strength.

Placing our study in the context of historical changes in HIV treatment is an important consideration when interpreting our findings in that our study straddled the introduction of highly active antiretroviral therapy (HAART) for treatment of

HIV, which dramatically decreased morbidity and mortality rates. Since widespread use of HAART began midway through our study, the use of HAART among our participants was variable over the course of the project.

Even with our study's limitations, the results identify several key areas in which future research ought to be directed to improve our understanding of depressive symptoms among HIV-positive adults. First, the successful identification and treatment of depressive symptoms among adults living with HIV/AIDS will likely decrease morbidity and mortality rates. Second, as medical interventions for people living with HIV/AIDS continue to advance, developing effective methods to increase adaptive coping skills, especially acceptance coping, are likely to improve mood and overall well-being. Moreover, future research should evaluate the effects of interventions that integrate spirituality and enhance acceptance coping in preventing and treating depressive symptoms among adults living with HIV/AIDS.

References

- Ashton, E., Vosvick, M., Chesney, M., Gore-Felton, C., Koopman, C., O'Shea, K. et al. (2005). Social support and maladaptive coping as predictors of the change in physical health symptoms among persons living with HIV/AIDS. *AIDS Patient Care and STDs*, *19*, 587–598.
- Belanoff, J. K., Sund, B., Koopman, C., Blasey, C., Flamm, J., Schatzberg, A. F. et al. (2005). A randomized trial of the efficacy of group therapy in changing viral load and CD4 cell counts in individuals who are living with HIV infection. *International Journal of Psychiatry in Medicine*, *34*, 349–362.
- Belsley, D. A., Kuh, E., & Welch, R. E. (1980). *Regression diagnostics: Identifying influential data and sources of collinearity*. New York: John Wiley & Sons.
- Blaney, N. T., Fernandez, M. I., Ethier, K. A., Wilson, T. E., Walter, E., & Koenig, L. J. (2004). Psychosocial and behavioral correlates of depression among HIV-infected pregnant women. *AIDS Patient Care and STDs*, *18*, 405–415.
- Carrico, A. W., Ironson, G., Antoni, M. H., Lechner, S. C., Duran, R. E., Kumar, M. et al. (2006). A path model of the effects of spirituality on depressive symptoms and 24-h urinary-free cortisol in HIV-positive persons. *Journal of Psychosomatic Research*, *61*, 51–58.
- Carver, C. S. (1997). You want to measure coping but your protocol's too long: Consider the Brief COPE. *International Journal of Behavioral Medicine*, *4*, 92–100.
- Carver, C. S., Scheier, M. F., & Weintraub, J. K. (1989). Assessing coping strategies: A theoretically based approach. *Journal of Personality and Social Psychology*, *56*, 267–283.
- Crano, W. D., & Brewer, M. B. (2002). *Principles and methods of social research*, 2nd edn. Mahwah, NJ: Lawrence Erlbaum.
- De Caussade, J.-P. (1921/2007). *Abandonment to divine providence*. New York: Cosimo Classics.
- Derlega, V. J., Winstead, B. A., Oldfield, E. C., & Barbee, A. P. (2003). Close relationships and social support in coping with HIV: A test of sensitive systems interaction theory. *AIDS and Behavior*, *7*, 119–129.
- Eller, L. S. (2006). Depressive symptoms in HIV disease. *Nursing Clinics of North America*, *41*, 437–453.
- First, M. B., Spitzer, R. L., Gibbon, M., & Williams, J. B. W. (1996). *Structured Clinical Interview for DSM-IV AXIS I Disorders—Non-patient Edition (SCID-I/NP, Version 2.0)*. New York: Biometrics Research Department, New York State Psychiatric Institute.
- Folkman, S., & Moskowitz, J. T. (2000). Positive affect and the other side of coping. *American Psychologist*, *55*, 647–654.
- Gore-Felton, C., Koopman, C., Spiegel, D., Vosvick, M., Brondino, M., & Winningham, A. (2006). Effects of quality of life and coping on depression among adults living with HIV/AIDS. *Journal of Health Psychology*, *11*, 711–729.
- Hayes, S. C., Follette, V. M., & Linehan, M. M. (2004). *Mindfulness and acceptance: Expanding the cognitive-behavioral tradition*. New York: Guilford Press.
- Ickovics, J. R., Hamburger, M. E., Vlahov, D., Schoenbaum, E. E., Schuman, P., Boland, R. J. et al. (2001). Mortality, CD4 cell count decline, and depressive symptoms among HIV-seropositive women: Longitudinal analysis from the HIV Epidemiology Research Study. *Journal of the American Medical Association*, *285*, 1466–1474.
- Ironson, G., Stuetzle, R., & Fletcher, M. A. (2006). An increase in religiousness/spirituality occurs after HIV diagnosis and predicts slower disease progression over 4 years in people with HIV. *Journal of General Internal Medicine*, *21*, S62–S68.
- Jöreskog, K., & Sörbom, D. (1996). *LISREL 8: User's reference guide*. Chicago, IL: Scientific Software International.
- Koenig, H. G., McCullough, M. E., & Larson, D. B. (2001). *Handbook of religion and health*. New York: Oxford University Press.
- Koopman, C., Gore-Felton, C., Marouf, F., Butler, L. D., Field, N., Gill, M. et al. (2000). Relationships of perceived stress to coping, attachment and social support among HIV-positive persons. *AIDS Care*, *12*, 663–672.
- Lackner, J. B., Joseph, J. G., Ostrow, D. G., & Eshleman, S. (1993). The effects of social support on Hopkins Symptom Checklist-assessed depression and distress in a cohort of human immunodeficiency virus-positive and -negative gay men: A longitudinal study at six time points. *Journal of Nervous and Mental Disease*, *181*, 632–638.

- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Leserman, J., Jackson, E. D., Pettito, J. M., Golden, R. N., Silva, S. G., Perkins, D. O. et al. (1999). Progression to AIDS: The effects of stress, depressive symptoms, and social support. *Psychosomatic Medicine*, *61*, 397–406.
- Linn, J. G., Monnig, R. L., Cain, V. A., & Usuh, D. (1993). Stage of illness, level of HIV symptoms, sense of coherence and psychological functioning in clients of community-based AIDS counseling centers. *Journal of the Association of Nurses in AIDS Care*, *4*, 24–32.
- Mayne, T. J., Vittinghoff, E., Chesney, M. A., Barrett, D. C., & Coates, T. J. (1996). Depressive affect and survival among gay and bisexual men infected with HIV. *Archives of Internal Medicine*, *156*, 2233–2238.
- Miller, S. H. (1952). Exploring the boundary between religions and psychiatry. *Journal of Pastoral Care*, *6*, 1–11.
- Mizuno, Y., Purcell, D. W., Dawson-Rose, C., & Parsons, J. T. (2003). Correlates of depressive symptoms among HIV-positive injection drug users: The role of social support. *AIDS Care*, *15*, 689–698.
- Moskowitz, J. T. (2003). Positive affect predicts lower risk of AIDS mortality. *Psychosomatic Medicine*, *65*, 620–626.
- Park, C. L., & Folkman, S. (1997). Meaning in the context of stress and coping. *Review of General Psychology*, *1*, 115–144.
- Park, C. L., Folkman, S., & Bostrom, A. (2001). Appraisals of controllability and coping in caregivers and HIV+ men: Testing the goodness-of-fit hypothesis. *Journal of Consulting and Clinical Psychology*, *69*, 481–488.
- Penedo, F. J., Antoni, M. H., Schneiderman, N., Ironson, G. H., Malow, R. M., Cruess, S. et al. (2001). Dysfunctional attitudes, coping, and depression among HIV-seropositive men who have sex with men. *Cognitive Therapy and Research*, *25*, 591–606.
- Penzak, S. R., Reddy, Y. S., & Grimsley, S. R. (2000). Depression in patients with HIV infection. *American Journal of Health-System Pharmacy*, *57*, 376–389.
- Pérez, J. E., Forero-Puerta, T., Palesh, O., Lubega, S., Thoresen, C., Bowman, E. et al. (in press). Pain, distress, and social support in relation to spiritual beliefs and experiences among persons living with HIV/AIDS. In J. C. Upton (Ed.), *Religion and psychology: New research*. New York: Nova Science.
- Prado, G., Feaster, D. J., Schwartz, S. J., Pratt, I. A., Smith, L., & Szapocznik, J. (2004). Religious involvement, coping, social support and psychological distress in HIV-seropositive African American mothers. *AIDS and Behavior*, *8*, 221–235.
- Radloff, L. S. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement*, *1*, 385–401.
- Reed, G. M., Kemeny, M. E., Taylor, S. E., Wang, H. J., & Visscher, B. R. (1994). Realistic acceptance as a predictor of decreased survival time in gay men with AIDS. *Health Psychology*, *13*, 299–307.
- Remien, R. H., Exner, T., Kertzner, R. M., Ehrhardt, A. A., Rotheram-Borus, M. J., Johnson, M. O. et al. (2006). Depressive symptomatology among HIV-positive women in the era of HAART: A stress and coping model. *American Journal of Community Psychology*, *38*, 275–285.
- Schwarzer, F., Dunkel-Schetter, C., & Kemeny, M. (1994). The multidimensional nature of received social support in gay men at risk of HIV infection and AIDS. *American Journal of Community Psychology*, *22*, 319–339.
- Siegel, K., & Schrimshaw, E. W. (2002). The perceived benefits of religious and spiritual coping among older adults living with HIV/AIDS. *Journal for the Scientific Study of Religion*, *41*, 91–102.
- Simoni, J. M., Frick, P. A., & Huang, B. (2006). A longitudinal evaluation of a social support model of medication adherence among HIV-positive men and women on antiretroviral therapy. *Health Psychology*, *25*, 74–81.
- Simoni, J. M., & Ortiz, M. Z. (2003). Mediation models of spirituality and depressive symptomatology among HIV-positive Puerto Rican women. *Cultural Diversity and Ethnic Minority Psychology*, *9*, 3–15.
- Smith, T. B., McCullough, M. E., & Poll, J. (2003). Religiousness and depression: Evidence for a main effect and the moderating influence of stressful life events. *Psychological Bulletin*, *129*, 614–636.
- Streiner, D. L. (2005). Finding our way: An introduction to path analysis. *Canadian Journal of Psychiatry*, *50*, 115–122.
- Thoresen, C., Bowman, E., Koopman, C., Durán, R., Gill, M., Yang, P. et al. (1996). *Principles of Living scale*. Unpublished measure, Department of Psychiatry and Behavioral Sciences, Stanford University.
- Tourangeau, R., Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response*. Cambridge, UK: Cambridge University Press.
- Turner-Cobb, J. M., Gore-Felton, C., Marouf, F., Koopman, C., Kim, P., Israelski, D. et al. (2002). Coping, social support, and attachment style as psychosocial correlates of adjustment in men and women with HIV/AIDS. *Journal of Behavioral Medicine*, *25*, 337–353.
- Wallace, B. A., & Shapiro, S. L. (2006). Mental balance and well-being: Building bridges between Buddhism and Western psychology. *American Psychologist*, *61*, 690–701.
- Woods, T. E., Antoni, M. H., Ironson, G. H., & Kling, D. W. (1999). Religiosity is associated with affective status in symptomatic HIV-infected African-American women. *Journal of Health Psychology*, *4*, 317–326.
- Yi, M. S., Mrus, J. M., Wade, T. J., Ho, M. L., Hornung, R. W., Cotton, S. et al. (2006). Religion, spirituality, and depressive symptoms in patients with HIV/AIDS. *Journal of General Internal Medicine*, *21*, S21–S27.

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